

MONTANA

Wildlife

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STATE OF MONTANA

Governor Donald G. Nutter

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CONTENTS

	Page
Good Fences Make Good Neighbors.....	1
Last of The Wild Missouri.....	2
Trout In The Clouds.....	6
Hunting-Fishing Boost Montana Economy.....	11
Hunting The Hen.....	12
Montana's Elk Through The Years.....	15
Tooth Talk.....	22
Moose Bombing.....	24
Moose—Montana's BIG Game.....	26

"GOOD FENCES MAKE GOOD NEIGHBORS"

Don Aldrich, president of the Western Montana Fish and Game Association, and Stanley Stipe unload and set up a stile on the Stipe Ranch near Charlo.



—Photo by Tom Smith

A Sportsmen's Project

The Western Montana Fish and Game Association, in keeping with the adage "Good fences make good neighbors," have taken some positive steps to help keep fences of their landowner neighbors in good repair.

The association built and distributed about 100 fence stiles to farmers in the Moiese and Charlo areas. Their objective was to help relieve damage to fences from continual crossing by hunters (pheasant hunters, mainly) and thereby create good will between hunters and landowners. Association members pointed out that installation of the stiles in no way obligated the farmers to the association or to hunters—that hunters should still ask permission to hunt on private property and could be forbidden access if the farmer so desired.

The wooden, ladder-type stiles were constructed by association members from materials that were purchased by the association.

In addition to fence stiles, "No Hunting Without Owner's Permission" signs were distributed to farmers.



General consensus of the many farmers contacted was that this project has helped sportsmen-landowner relations considerably. Several stated that they believed hunters are becoming more considerate and sportsmanlike than previously. Some attributed this to the activities of the association and other sportsmen groups.

Other association activities to improve and maintain sportsmen-landowner relations include:

. . . . Highway billboards asking hunters to be sportsmen.

. . . . Distribution of copies of the NRA Hunter's Code of Ethics—large posters for display in business windows and wallet-sized cards to individuals.

. . . . Distribution of pocket-sized printed sections from the Montana Fish and Game Laws (concerning trespass) and the Montana Water Safety Law.

. . . . Local radio programs discussing sportsman-like conduct of hunters.



—Photos by Author

Down river from Virgelle the Missouri River winds through a beautifully remote area dominated by white sandstone cliffs. This area was first mentioned in the Journals of Lewis and Clark, written over a century and a half ago.

LAST OF THE *WILD MISSOURI*

By BOB COONEY, Chief of Game Management

From Three Forks, Montana to St. Louis, there is now only one significant part of the Missouri River that has not been altered in some way. Dams, impoundments, diversions, bridges, riverside croplands and communities characterize the length of this historic waterway. In contrast, over a hundred miles of winding river from Virgelle Ferry, in north central Montana, through breaks and badlands to the upper end of the Fort Peck Game Range retains much of its original wild character.

Early last summer several of us had an opportunity to visit this interesting area. In the group were representatives of the National Park Service, Fish and Wildlife Service, State University and the Montana Fish and Game Department. Our objective was to study and evaluate the wildlife, recreational, and scenic aspects of this portion of the river and adjacent breaks.

As our boats moved out into the current of the river that first morning at Virgelle,

we were caught with a feeling of adventure. Above, lay Fort Benton, head of historic navigation. Below wound a hundred miles of river, accessible for the most part only by boat. During our three-day trip, we were impressed by the remoteness and beauty of the area as well as its interesting place names. Many of these names can be traced back to the records and journals of early explorers. Kipps Rapids, Drowned Man Rapids, Haystack Butte, Hole-in-the-Wall, Wolf Island, Cow



This is Virgelle Ferry, the starting point for river trips into the last unchanged stretch of the Missouri River —once the main river route to the west.

Island, Bull Creek, and many more seemed particularly fitting to this area steeped in Montana history. Up river we especially enjoyed the beautiful White Cliffs that were first described in the Lewis and Clark Journals over a century and a half ago. Below the mouth of the Judith River the breaks widen on either side, giving an added feeling of remoteness.

On our last day out at the mouth of Two Calf Creek, below Grand Island, we held an informal discussion. We talked of the many changes that might soon be in store for this beautiful river country.

Along the river we saw remains of a little rock cabin hidden back from the south shore. It was interesting to conjecture as to what manner of man lived here a century ago—trapper, outlaw, or perhaps “wood hawk” for the river boats.

We knew that explorations for possible dam sites were being carried out. We had seen several freshly bulldozed roads down steep slopes to the river's edge.

We had each viewed the area, from slightly different points of view. Several had thought primarily of wildlife possibilities; others, the scenic and recreational values of the area. All, however, had been impressed with the need for multiple purpose planning. In such a program each important use would receive fair consideration, and the present livestock economy of the area would not be disturbed.





Cathedral Rock was a landmark for the river captains of an almost forgotten era. A newly dozed trail across the ridge above broke the spell of an otherwise remote setting.

We took time out to replace a sheer pin on the outboard motor. It was difficult to concentrate on navigation problems with the historically famous Hole-in-the-Wall Cliff on the opposite side of the river to be enjoyed.



One has only to view this area as we did from a boat to sense its tremendously important recreational value. In this regard it was agreed that high priority should be given to the retention of the wild character of at least part of this region. This would be the last opportunity to save a section of a unique river area, suspended as it is in time, only a step from the moccasined feet of early explorers and trappers and the lusty epic of the river boats.

Time would be the problem—time to work out such a plan. Deep and impelling as the impression of remoteness had

seemed on the river, we knew that this fragile quality could be permanently lost by hasty, ill-advised programs. We were pleased, however, with the increasing interest in this unique area, both from a State and National level. The fact that its outstanding historic and recreational values are being given consideration is evidence of the maturing quality of present day land use planning. Perhaps through this coordinated effort it will be possible for our children and theirs to view from a boat, and enjoy as we did this last unchanged stretch of a great waterway—once the main river route to the west.

Below the mouth of the Judith River the breaks widen on either side of the river. The area is less colorful than the White Cliffs region above but seems to possess an ageless quality of remoteness. It's easy there on the river to slip back in retrospect into the era of the explorer and trapper and the adventure-filled epic of the river boats.





—Photo by Lloyd Casagrande

Trout In The Clouds Offer A Challenge

LLOYD CASAGRANDA and VERN WAPLES

Is part of your enjoyment of a fishing trip to walk humbly among rugged mountains and sheer rock cliffs? If so, chances are you've fished in the clouds in the Beartooth Mountains of south central Montana, or should.

This summary of some of the more accessible lakes, how to reach them, and types of fish found may stimulate your desire to learn more about and sample some "top of the world" fishing. This cannot be a complete report since there are hundreds of lakes and scores of trails in the area. Accurate maps are available from the U.S. Geological Survey and other sources, and guide service or detailed advice concerning specific locations and conditions are easily obtained locally.

West Rosebud

Our first jumping-off point will be in Stillwater county from the end of West Rosebud creek road at the Mystic Lake power plant. This road may be reached from Highway 307. Three miles above, on an improved trail is popular Mystic Lake. Only a quarter mile above the inlet at Mystic Lake, on a trail crossing a log

jam in the creek, is Island Lake. The good trail continues to Silver Lake, about eight miles from the road's end. Each of these lakes contains medium-sized rainbow trout. Lakes beyond Silver Lake are reached by cross-country travel.

East Rosebud

Around the foothills, the next jumping-off point will be from East Rosebud Lake, the end of the East Rosebud Creek road in Carbon county. To the east, following a five-mile climb on a good U.S. Forest Service trail # 13, is Sylvan Lake. Immediately following the ice break-up in the spring, golden trout fishing is at its best with the colorful goldens running up to 16 inches. Two miles further up the same trail is Crow Lake, with a good camping area and an abundance of 10-inch eastern brook trout.

South from East Rosebud Lake, along a good trail following East Rosebud Creek, is fine fishing and some of the most breathtaking scenery found anywhere in the state. First lake along the trail is Elk Lake with easily-caught brookies averaging about nine inches long. A little over two miles above Elk

Lake is Rimrock Lake. The good trail continues one and a half miles to Lake at Falls, lowest of a chain of five lakes containing the spectacular golden trout which run 12 to 14 inches long. The others are Big Park, Medicine, Dewey, and Fossil lakes. Fishing for goldens is excellent in all of them right after the ice leaves in the spring. The creek between the five lakes also produces good catches, but access is difficult. The trail ends at Lake Falls and the only approach to the upper four lakes is cross-country.

The lakes west of the East Rosebud on Granite Creek and the Cairn Lake area are reportedly without fish or access by trail, and the same is true of the lakes in the Whirlpool Creek drainage south of Rainbow Lake.

Access to Snow Lake for small rainbow trout fishing is by a two-mile cross country trek up Snow Creek from East Rosebud Creek.

To the west of East Rosebud Lake along Armstrong Creek and Phantom Creek are lakes containing brookies, rainbow, natives, and grayling. A suitable foot path leads to Slough Lake and eight-inch brookies, but access to the two-pound rainbow and natives in Phantom Lake, two and one-half miles beyond, is by a steep, cross-country climb. Above Phantom Lake, both Froze-to-Death and Turquoise lakes are stocked with grayling and may be reached over trailless slide rock. Plan an overnight camp at Phantom Lake.

West Fork

The road along the west fork of Rock Creek offers another jumping-off point to a myriad of mountain lakes. Just below Basin camp a good trail heads south to the first Basin Creek Lake and eight-inch cutthroat trout three miles away. The second Basin Creek Lake with brookies as large as a pound and a quarter lies only a mile beyond. However, no trail connects the two lakes.

Southward from Camp Nelson on Timberline Creek are Gertrude and Timberline lakes. Both are within four trail miles from the road and have easily-caught, eight-inch eastern brooks.

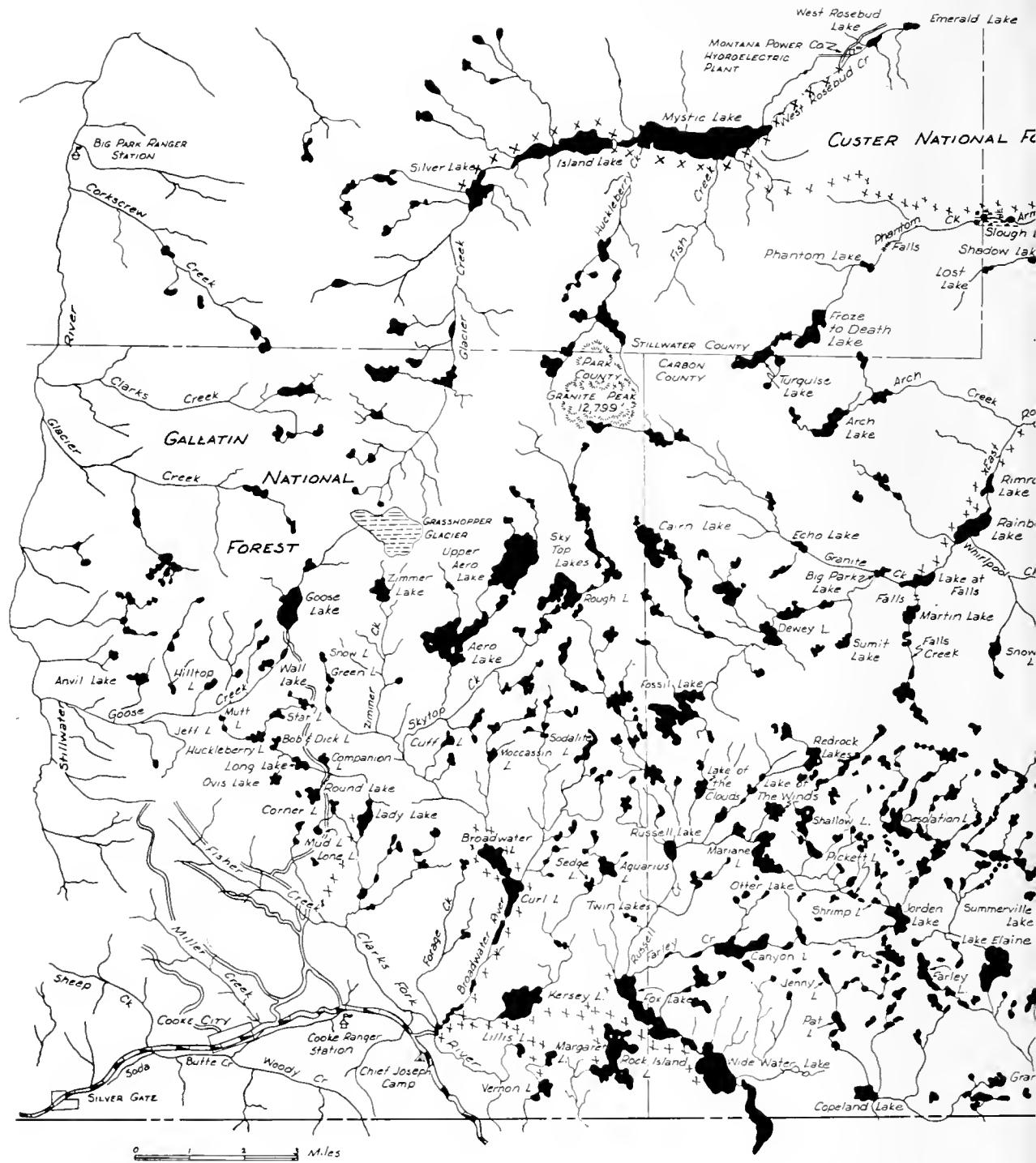
From Camp Bots Sots, a Forest Service trail #13 along the west fork of Rock Creek provides a scenic climb and access to many lakes in the drainage. From Quinnebaugh meadows a rougher trail about 1½ miles up the mountain leads to Lake Mary and one-pound brookies. Farther up the meadow a poor trail along Senal Creek leads to Senal and Dude lakes. Brook trout run from ¾ of a pound in the former up to three pounds in the latter. From Sundance camp, eight miles above Camp Bots Sots on the West Fork trail, a mile cross-country trek leads to Ship, Triangle and Bowback lakes. Ship and Triangle both have small eastern brook and Bowback produces cutthroat trout up to three pounds. Kookoo Lake in the vicinity supports no fish.

Lake Fork

The route to the Lake Fork of Rock Creek drainage is by Forest Service road opposite Richel Lodge (near Red Lodge) for about one mile, then by trail along the creek bottom. The first lake on the trail, Lost Lake, was poisoned during 1960 and has no fish.

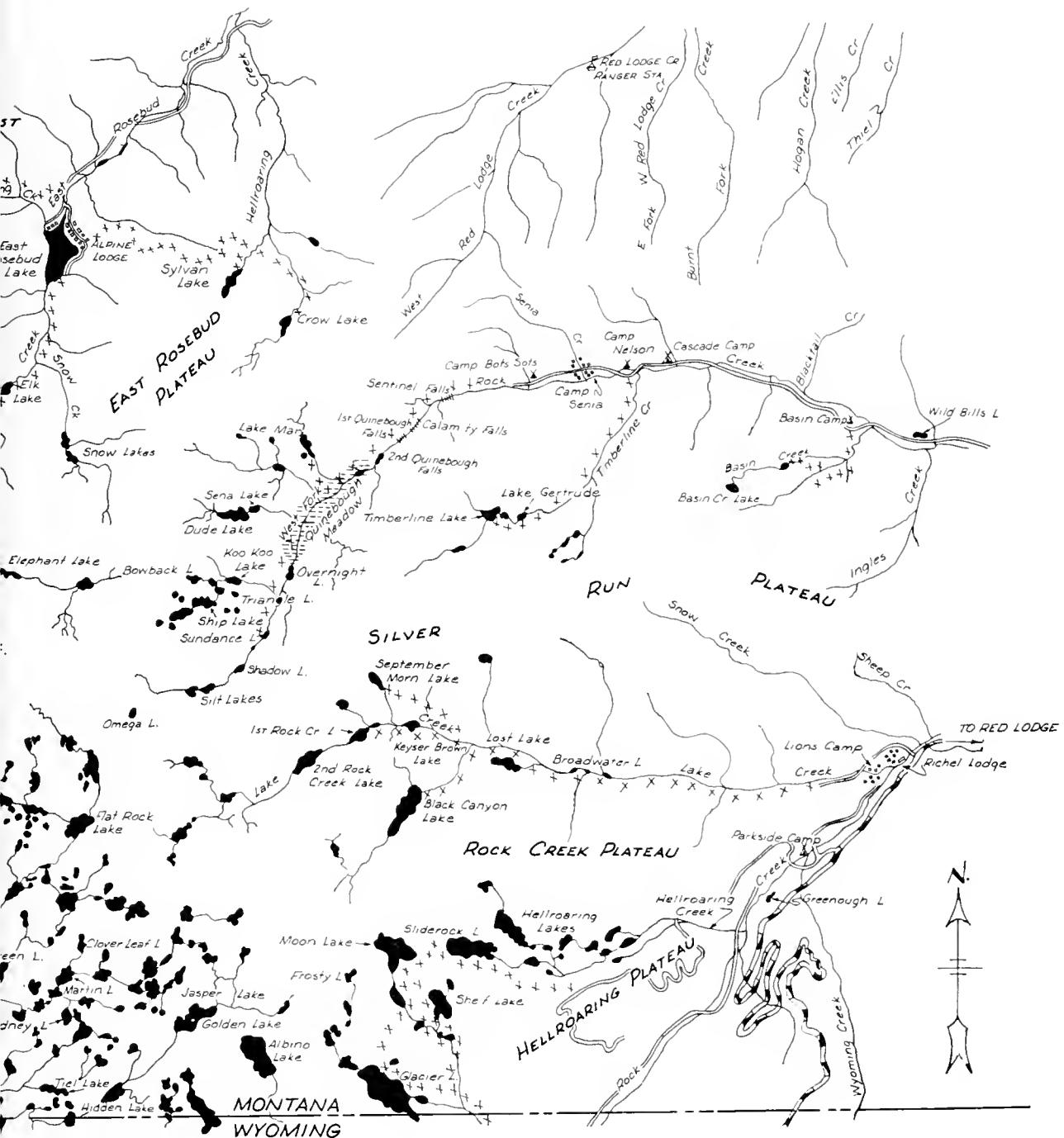
Above Lost Lake the trail forks and the indistinct south fork proceeds through Slide Rock to Black Canyon Lake with its tough-to-come-by brook trout up to four pounds. Keyser-Brown Lake, on the main trail, provides easily-caught small brookies and a good area to camp. Both lakes are about eight miles from the end of the road. The stream above Keyser-Brown Lake and First Rock Creek Lake have larger eastern brooks and cutthroats up to 11 inches. September Morn Lake, located on a side trail originating ¾ mile below Keyser-Brown Lake, also has eastern brook trout up to a foot long.

The Hellroaring chain of lakes may be reached from a trail leaving the Forest Service road on the Hellroaring plateau. Travel on this road is not recommended for low vehicles beyond Parkside camp. The main Hellroaring Lake has brook trout above two pounds. Seven other lakes in the chain have brooks between 8 and 11 inches in length. Slide Rock Lake in the same vicinity has brookies



XXXXXX TRAILS, — COOKE CITY

There are plenty of fish for the fisherman willing to leave the highway and enter the high country of the Beartooth Mountains. This map will serve as a general guide to the lakes, roads, and trails in the area. It was produced using Government maps and the "Top of the World" map of D. M. Marino of Red Lodge. Lakes are drawn larger than scale.



up to $\frac{3}{4}$ of a pound. All lie within $1\frac{1}{4}$ miles of the road along passable trails.

From the end of the road on Hellroaring plateau, about eight miles above Parkside camp, a steep foot trail departs for Glacier, Shelf and Moon lakes. About one-half mile the trail branches and both forks become indistinct. Still, little difficulty is encountered in reaching Glacier Lake by the left fork or Shelf and Moon lakes via the right fork. The brook trout in Glacier Lake run up to three pounds; in Shelf Lake, to 11 inches. Moon Lake has natives to almost two pounds.

Cooke Pass

Access from Cooke Pass along the Cooke City highway is by a foot bridge across the Clark Fork River and along a good Forest Service trail. The first fork in the trail follows the Broadwater River to Curl and Broadwater lakes. Good fishing for small eastern brook trout may be found in the river both above and beyond the lakes. Foot-long brookies and some cutthroat may be caught in either.

Another fork in the trail provides access to Lillis, Margaret, and Vernon lakes. Both Lillis and Vernon lakes have brook trout over a pound and fishing is considered the best in early spring prior to heavy growths of aquatic vegetation. Margaret Lake provides a challenge to fishermen because of its swampy surroundings and crafty native trout up to three pounds.

On the main trail, both Kersey Lake and the stream above are excellent spots for children to catch nine-inch brook trout on grasshoppers. Farther into the back country is Rock Island Lake with small eastern brook. Beyond, good fishing for rainbows up to two pounds can be found in Fox, Wide Water, and Big Moose lakes.

Canyon Lake on Farley Creek has produced rainbows larger than seven pounds, but the smaller ones are more easily caught. Russell Lake to the north of Fox Lake has eastern brook trout up to two pounds, with the majority averaging less than a pound. Aquarius and Sedge lakes to the west are stocked with grayling.

but access is rather difficult because of the lack of defined trails.

More Cooke

Four-speed or all-wheel drive vehicles are required to reach Round Lake via a road leaving the Cooke City highway opposite the Cooke Ranger station. Access to Lady Lake is by trail from the Great Western abandoned mill site. The $1\frac{1}{4}$ mile walk should yield good fly fishing for brookies up to 11 inches.

From Round Lake with its eastern brook trout up to $1\frac{1}{2}$ pounds, a road for all-wheel drive vehicles penetrates as far as Goose Lake. Either along the road or within easy walking distance are Corner, Long, Companion, Ovis, Bob, Dick, Huckleberry, Mutt and Jeff lakes. All have small eastern brook trout. Star Lake, also along the road, has been planted with albino rainbow trout. Goose Lake, at the end of the road, has natives up to 14 inches. Lake Abundance, also with foot-long natives, may be reached with an all-wheel drive vehicle through Daisy Pass.

This is only a resume of some of the more commonly fished lakes in the Beartooth mountains and what they contain. Creel limits are the most liberal in the state. In lakes of the Beartooth mountain area of Carbon and Stillwater counties, and that portion of Park county lying within the Clarks Fork drainage (Cooke City area) except Cooney reservoir, East Rosebud, West Rosebud, Emerald, Crater and No Ketchum lakes, the daily bag and possession limit on all species of trout, char and grayling is presently ten pounds and one fish—regardless of number.

While poring over detailed maps and descriptions to plan your trip keep in mind a trail mile on a flat map may, in reality, be a rather steep and slowly traversed mile (especially at altitudes in excess of 9,000 feet). Ample time should be allotted. At these altitudes snow and ice leave slowly and conditions in the lower elevations are not necessarily a guide to the arrival of summer in the mountains. A camera and sufficient clothing will help make your trip a memorable one.



Hunting Fishing Boost Montana Economy

248,000 PERSONS HUNT AND FISH
IN MONTANA ANNUALLY.

187,000 RESIDENTS, OR BETTER THAN ONE OUT OF EVERY
FOUR MONTANANS FISHED AND/OR HUNTED.

120,000 **RESIDENTS** hunted big game and/or fished
+ 67,000 **RESIDENTS** fished and/or hunted birds
+ 61,000 **NON-RESIDENTS** hunted and/or fished in Montana during 1960

=248,000

The average resident sportsman annually spends \$271.00 for hunting and fishing in Montana.

The average non-resident sportsman annually spends \$157.00 for hunting and fishing.

MONTANA HUNTERS AND FISHERMEN SPEND \$60.3 MILLION

RESIDENT SPORTSMEN PAY	NON-RESIDENT SPORTSMEN PAY
\$13,498,000	Tents, Sleeping Gear, Stoves, Lanterns, Camping Equipment and Hunting Vehicles
9,335,000	Food and Refreshments
8,629,000	Transportation
5,088,000	Fishing Boats and Motors
3,336,000	Rifles and Related Items
3,254,000	Fishing Tackle and Bait
1,698,000	Ammunition
1,248,000	Hunting and Fishing Clothing
1,141,000	Lodging
950,000	Miscellaneous Expenditures for Hunting and Fishing
570,000	Expenditures by People Not Requiring Licenses
454,000	Packers and Guides
319,000	Dog Expenses
123,000	Archery Equipment
\$49,643,000	\$ 8,782,600

Of this \$60.3 million, Montana businessmen receive \$58.4 million.



Hunting the Hen

For the third consecutive year in Montana there has been a limited open season on hen pheasants in the Fairfield area west of Great Falls. A similar season has been opened for two years in the Kinsey area near Miles City.

So what's new about hunting hens? After all, we've always hunted the hen sage grouse, sharptailed grouse, ruffed grouse, blue grouse, Franklin's grouse, Hungarian partridge, turkey, duck and goose.

The point is that there remains one "sacred cow" among Montana's lady game birds. This is the hen pheasant.

There is nothing that makes the hen pheasants so unusual that they couldn't provide hunting just like other female game birds. In fact, in some states they have been hunted extensively. In California, for instance, hen pheasants have been hunted since 1939 in certain areas, and over a large part of the state since 1955. California has found that up to 45% of the fall hen population can be removed each year by hunting without endangering reproduction. They have shown that "on areas in California where hen shooting has been permitted for the past 18 years, and where the wild hen kill has **exceeded** the cock kill, no measurable decrease in the pheasant population has occurred." They have concluded that a number of hens can be safely taken from

an established pheasant population each year, even in moderate production years.

Why then hasn't the hunting of hens been adopted in all pheasant producing areas? Tradition persisting from the days when pheasants were first introduced tends to hold the hen pheasant aloof as something unique and untouchable, while actually the same basic principles apply to all Montana game birds. Pheasants, like other birds, are regulated by nature. Each year, nature accounts for from 65% to 75% of the year's birds. In other words, only about 25% to 35% of last fall's birds will live out the year whether they are hunted or not. So birds taken by hunters are a part of, not additional to this annual loss. In spite of this heavy natural mortality, there are each spring enough hens to produce all the young that can be maintained under natural conditions.

To keep pace with new ideas and techniques in the field of game management, your department has been conducting intensive studies on the effects of hen pheasant harvests under Montana conditions. Throughout the year, information is gathered on the Fairfield area where hens are hunted. This information is then compared with that from the Conrad area where hens are not hunted.

During the fall, banding crews systematically work fields in order to catch and band pheasants. The birds are caught

The first step in night banding is to find and catch the pheasants. When caught in the glare of a spotlight, the birds usually are bewildered enough that they can be caught with a net.



Startled birds will sometime take wing and disappear into the darkness. About 75% of ones seen are actually caught.

Each metal leg band is numbered so information may be obtained on individual birds.

Measurements of certain wing feathers tell when the bird was hatched.



during darkness when they can be blinded by spotlights. Each bird is tagged and wing feathers are inspected to determine just when the bird was hatched.

During the hunting season, checking stations are operated in both areas to show the percentage of banded birds shot and to provide a year-to-year index on the harvest of ringnecks.

Winter is the time for making counts which show the ratio of hens to cocks. Then, during the spring and summer both areas are checked for the number of nesting birds and the success of hatching. At the end of each summer the welfare of both flocks is evaluated so effects of the previous year's hen harvest can be known.

Conclusions that can be drawn from the study thus far show first of all that on a year-to-year comparison there is no difference between the two areas so far as nesting birds is concerned. Each shows a similar pattern. Since the breeding population trends are similar on the two areas, the hens harvested by hunters at Fairfield can be considered "bonus" birds. A similar increase in pheasant populations

over the two areas resulted in a higher hunter success at Fairfield than Conrad during the 1961 pheasant season. In other words, more birds at Fairfield went to the hunter with less loss to natural causes.

Information was also obtained under different hunting regulations. Variance in regulations included restricting hunters to one hen in the bag, either sex hunting, and varying hunting between the beginning and the end of the general pheasant season. This information permits an accurate forecast of the percent of hens which will be harvested under these different conditions and permits a sound basis for modifying regulations to meet various situations.

With an ever-increasing number of hunters and no increase in area to produce pheasants, more efficient use of the birds is necessary. One way of increasing this efficiency is to include hen pheasants in the bag. The past three years' study has shown that this additional hunter harvest can be accomplished without detrimental effects to future hunting of this fine game bird.



—Photo by Gene Decker

Montana's Elk Herds Through the Years

By VERN CRAIG and JIM McLUCAS

The elk is a game animal of outstanding quality and one of considerable controversy. To get a full picture of the wapiti, as he is often called, we must turn back a few years for a look at his historic homeland and the fauna that shared it.

EARLY ABUNDANCE OF GAME

Montana to the early trapper was a rugged wild land with great silent mountains rising from seas of prairie grasses. Trappers probed the unmarked wilderness and took from it a wealth of rich furs. Wild animals roamed in almost unimaginable numbers over the foothills, through vast reaches of the lowlands, and in the maze of eroded breaks.

For all the abundance of animal life there was a notable absence of game in the higher mountains. Elk were recorded by early explorers as being plentiful through major drainages of eastern and central Montana as far west as the present

location of Missoula. Journals of Lewis and Clark substantiate this lack of game in the high country by stating that no elk were seen from the time they crossed the Bitterroot Mountains until they approached the mouth of the Columbia River. Ross and Ferris, early explorers, also make no mention of elk in the northwest part of Montana between 1800 and 1830. They failed to mention the presence of elk in Idaho north of the Snake and Salmon rivers and eastern Washington.

Scattered tribes of Indians and a handful of trappers that hunted what is now central and eastern Montana didn't even scratch the great herds of those early days.

Captain Raynolds wrote of the period from 1859-1860 stating that except in the vicinity of the Oregon Trail, no inroads had been made on the game numbers. On the Powder and Tongue Rivers the buffalo had so heavily grazed the range that his men were obliged to cut limbs of cottonwood trees to feed their mules. It was

said that this overgrazed condition continued for two weeks travel. Noting some other areas, Raynolds wrote that elk, deer and antelope were found abundantly in the country about what is now known as Henry's Lake and the Madison Basin as well as in the main valley below. Down the river (Missouri) from the junction of the Madison, Gallatin and Jefferson to the Yellowstone game of all kinds was very abundant. Raynolds got the impression that there had been some reduction of the vast multitudes described by Lewis and Clark and Prince Maximilian.

GAME DWINDLES

The great slaughter of wild herds began after the Custer massacre of 1876, though some inroads had already been made on game in a few areas. Ironically, the down-fall of the bison can be closely correlated with progress of the railroads into the west. In 1880, the northern bison herd numbered nearly a million animals, but in four years the herd was practically wiped out. Destruction of the bison rather overshadowed the killing of smaller, less spectacular game species. Actually, practically everything that grew a fur or hide was being stripped and the pelts shipped to eastern markets. A look at some of the fur shipping records from Fort Benton will give an idea of the tons and tons of hides taken, even before the major slaughters took place.

JULY 29, 1875

Fur & Hide Shipment
by John C. Gowey Co.

12,450 buffalo robes
33,890 lbs. deer and antelope
26,800 lbs. elk skins
6,120 lbs. beaver skins
1,600 lbs. tanned deer skins
800 lbs. tanned elk skins
125 cross fox
490 red fox
350 kitt fox
680 marten
73 lynx
68 wolverine
1,680 wolves
520 coyotes



This was home base for a hide hunter. The shelter was green hides stretched over a hole in a cut-bank.

128 fisher
375 mink
6,000 muskrat
375 badger
225 bear

Montana's game was harrassed not only by the hunter's gun but also by a rather sudden change in the nature of their environment. Cattle and sheep took over the lowland ranges while in the fertile plains and valleys, fields of virgin soil were broken by the plow.

Scattered remnants of dwindling game now existed primarily in mountainous areas instead of the plains and foothills they had formerly inhabited.

The following excerpt from the Fort Benton Record described the early depletion of game.

"Our Sun River Letter"
"Sun River M. T. Feb. 26, 1877
"To the Editor of the Record:

"Times are extraordinary dull here at present, a condition of things which seems to be prevalent all over the Territory. It is believed that the present season has been one of the poorest known for hides



and furs, as parties from the North say that wolves and buffalo are not to be had, and many of the hunters are completely ruined by the season catch. The Walla Walla and other Indians are reported on the east side. They are said to be following the game and a nice game they will have finding any. It is the first time these Indians have been on this side in many years. . . .”

Theodore Roosevelt described hunting on his ranch near the Little Missouri in southeastern Montana during 1885. Specifically of elk, he wrote . . . “Five years ago elk were abundant in the valley of the Little Missouri and in the fall were found wandering in herds of a hundred or more. But they now have vanished completely, except that one or two may lurk in some of the most remote and broken places.”

Elers Koch (one time supervisor of the Gallatin National Forest) described hunting trips during 1905, 1906 when he packed for a full month through the wildest part of the southfork of the Flathead and the Sun River country. In all his wanderings the total big game seen was one mountain goat, though he described grouse as fairly abundant.

And so the great herds had all but vanished. From 1890 to 1910, game numbers were at an all time low. At that time, only

two areas in the state could boast any numbers of elk. These were adjacent to Yellowstone Park, and around the upper Sun and southfork of the Flathead Rivers. Earliest authentic records show that elk in the entire Sun River Drainage numbered somewhere between 200-300 head during 1910.

EARLY MANAGEMENT ATTEMPTS

By the time that Montanans became worried enough to do something about managing their wild game, there wasn't really a lot of game to manage. The big problem would be to build back decimated herds in a country where there had been some great changes in land use.

The earlier attempts at management were nearly all in the form of restrictions. As early as 1864 the first territorial legislature had passed a few laws to regulate fishing. Sporadically after that, lawmakers put new regulations on the books, but practically no provisions were made to enforce them.

It was realized that some agency would have to be responsible for fish and game resources. In 1885 legislation set up a board of Game Commissioners to assume this responsibility, but it was not until 1901 that a real effort to enforce laws was made. During this year the first state game warden, W. F. Scott, was appointed. If anyone had troubles, Scott did. He w .



This is one of the first permanent traps to be erected. It is located near Mammoth in Yellowstone Park.

given a maximum of eight wardens to ride herd on a public which was generally ignorant of game laws and adamant toward the ones they knew. Each warden was paid \$100 monthly to cover his salary and expenses. Expenses often involved the cost of bringing in a violator as well as the warden's expense for travel, food and lodging.

In spite of the obstacles these forerunners had to contend with, it appears that some game and furbearers prospered under their care—especially those game animals and furbearers which were given complete protection. But this was only a crude beginning of management. Enforcement, necessary as it was, left a lot to be desired in the building back of game.

New divisions began to evolve in the department, and a plan was designed for re-distribution of elk. In 1910, 25 elk trapped in Yellowstone Park were given their freedom on Fleecer Mountain near Butte, Montana. This was the first transplant to be made in the state and the project gained immediate approval and popularity of both the department and the public.

Department officials estimated that given five years they would replant all areas that were suited to elk. The magnitude of the job, however, was grossly underestimated and it was not until the

mid-fifties that the job of establishing new herds was pretty well completed and the emphasis on elk shifted to the management of established herds.

Sportsmen groups assisted the department, hamstrung by lack of funds, during earlier plants by paying shipping costs at about \$5.00 per elk. Help was forthcoming also in the actual job of catching and moving the animals.

NUMBER OF ELK RELEASES BY FORESTS

Deerlodge Forest	1,474
Cabinet Forest	143
Bitterroot Forest	80
Lolo Forest	542
Beaverhead Forest	350
Lewis & Clark Forest	179
Kootenai Forest	161
Helena Forest	92
Custer Forest	415
Gallatin Forest	62
Total elk released	
National Forests	3,498

ELK RELEASED OTHER THAN NATIONAL FORESTS

Beaver Creek	40
Garnet Range	252
Crow Indian Reservation (Hardin)	534
Knowlton (Miles City)	25
Fort Peck Game Range (Near Glasgow)	169
National Bison Range (Moiese)	67

Glacier Park	31
Pine Ridge (southeast of Billings)	25
Wolf Ranch	30
Total Elk Released Other Than National Forests	1,173

TOTAL ELK RELEASED IN MONTANA

1910-1960 4,671

SOURCE OF ELK FOR RELEASE

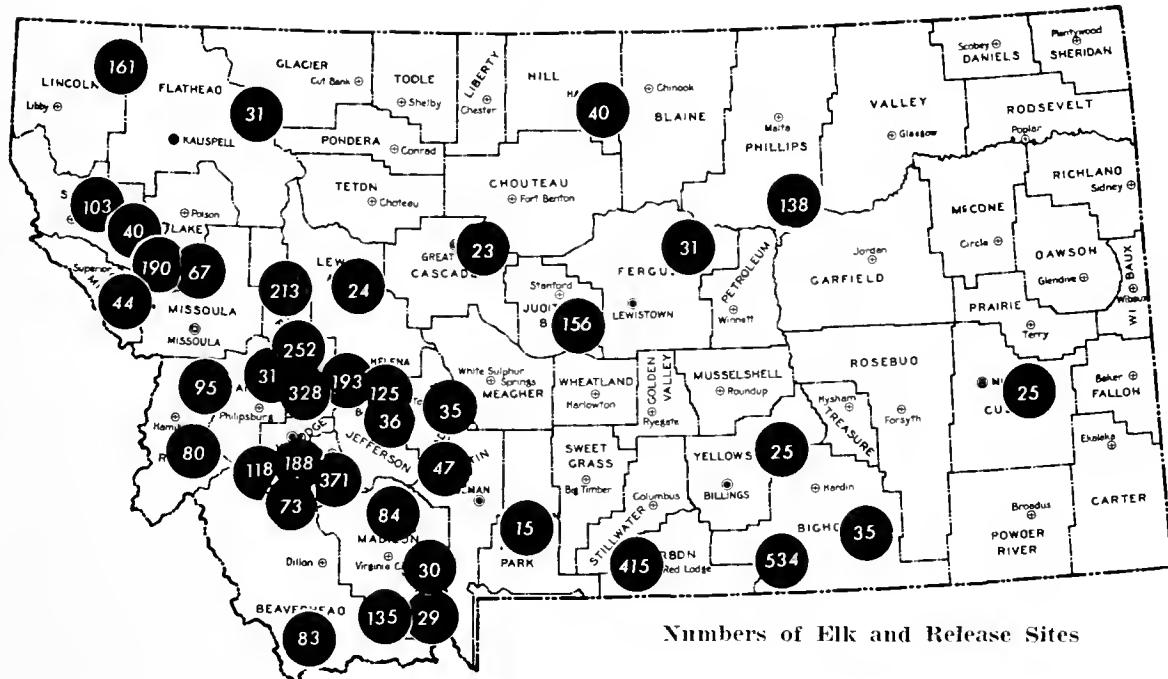
Yellowstone National Park— Gardiner	4,274
Moiese National Bison Range	312
Jackson Hole	54
Ted Woodworth Ranch, Wisdom	31

HOW THE ELK WERE CAUGHT AND MOVED

Catching elk is no great problem so long as the elk cooperate. Basically the elk trap is an eight-foot high corral fifty feet or larger in diameter. A smaller corral and loading chute are attached. Hungry elk follow lines of alfalfa into the corral and are trapped when the gate is swung shut. Earlier traps were permanent structures situated on wintering grounds. The gates were closed when an observer pulled a wire from some distant vantage point.

After the elk are trapped, they are driven into the smaller corral where they can be handled. Antlers are removed from

MONTANA.





After having his antlers sawed off, this large bull decided to leave the party. Most elk are nervous, but few attempt to go over chutes.

bulls for safety purposes and so they require less room for transportation. This, by the way, causes no discomfort to the animal.

With the development of the program, trapping techniques were improved. Portable traps were devised so they could be moved to the most strategic locations. Gates on these traps are closed when a feeding animal bumps a trip wire at the back end of the corral.

Moving methods have been improved too. Most of the earlier shipments were made by rail, and some heavy losses were caused by trampling. Losses were reduced when cars were divided into three compartments so that larger, stronger animals could be separated from weaker ones. Even wagons and large crates have been used to get elk to their new homes. Now, trucks do the moving swiftly and efficiently and losses have been reduced to an absolute minimum.

A NEW PROBLEM

In addition to the transplanting program, establishment of game preserves

and hunting restrictions were effected to give elk added protection. As the herds developed, spots began to appear where the problem was one of too many rather than too few elk. Now a new approach to elk management was necessary. Though on the face it would appear that cutting down game numbers to a proper level would be a simple matter of hunting, the solution to over-abundance in certain areas was, and still is, somewhat of a puzzle.

The hunting public had been so instilled with the idea of expanding elk numbers that explaining the need for reducing herds was an enigma. Additionally, range lands adjacent to park and preserve areas were taking a beating merely because of the protection against hunting in those areas. Better forage plants in some of the elk areas were disappearing and erosion was becoming a problem on some of the more heavily utilized winter ranges.

Nature, given a chance to run its course, will bring game herds down in

areas of over-abundance, but not before ranges have been badly abused. These scars take a long time in healing. Such a reduction through winter starvation did occur in the 1920's. Notably starvation was apparent in the Upper Gallatin and Yellowstone herds. Severe winters intermittently forced large migrations of elk from Yellowstone Park with the much publicized Gardiner Firing line as a result.

TODAY'S PICTURE

Some good harvests were made in the major over-used areas, but the benefits were short-lived where elk could take ready refuge from hunting. Abandonment of closed areas was one step forward, but a few trouble spots persist. Mild winters and hesitancy of the Northern Yellowstone elk to move out of the park has caused over-use of elk range inside Yellowstone Park boundary. Conditions there became so serious that the park service decided to reduce elk numbers by trapping and direct reduction within the park boundary. Trapping has its drawbacks—

relatively few elk can be captured, but even if they could be trapped in large numbers, there are now limited places to put them. Some elk can be spread around Montana in accordance with agreements worked out with the Forest Service and landowners in the areas. But the days of establishing new herds are, for the most part, over. We have saturated suitable areas with elk, and even as important as the program was at one time, the establishment of new elk herds is pretty well completed.

Montana is one of the best elk hunting states in the nation — records bear this out. During 1959 we topped all states. Information for the 1961 season is not complete, but we experienced a good elk season last year. There are, however, still some big problems facing elk management. Montana will be able to hold its enviable position as an elk hunter's paradise only so long as we can keep the numbers of this fine animal to a point where they are in balance with their food supply.

TOOTH

TALK



Collection and preservation of specimens is an important part of working with plant and animal life. Whether the specimen is a minute slice of tissue or the vertebra of a dinosaur, each has a story to tell.

Teeth of animals, for example, reveal a lot about their owners. Identity of the animal, age, general feeding habits and conditions of its environment are some of the things that may be determined with reasonable accuracy.

Most mammals have four general kinds of teeth. From front to rear on the jaw these are incisors, canines, pre-molars and molars. The bulk of each tooth is composed of dentine, partly or completely covered by a layer of hard enamel. Inside the tooth is a softer pulp that supplies blood and nerves to growing teeth.

The most primitive animals that sported backbones (vertebrates) had cone-shaped teeth with single straight roots. Most warm-blooded vertebrates of today have multiple roots on teeth that are highly specialized to deal with certain kinds of food. Canine, or eyeteeth of contemporary mammals have undergone the least change.

The average human having cowered in a dentist chair can look back upon his ancestors with some envy—toothwise that is. Teeth of pre-historic men were practically free of decay.

As the lower jaw of humanity shortened with the passing of time, man has not only become weak chinned, but suffers more crowded and less regular dentition. It appears also that we are gradually losing our wisdom teeth. It's interesting to wonder what evolution will do to our kind and to other animals over another million or two years.

ELK

Lower jaw of adult elk at left is characteristic of ruminant animals which browse extensively on fibrous plant parts. These foods are cut by the sharp enameled teeth before being swallowed and are later ground by the same teeth when the food is regurgitated as the cud.

When the teeth are finally worn smooth from years of use, the animal is "smooth mouthed" and unable to properly grind rough forage. Such animals may die for lack of nourishment even though food is plentiful.

BEAVER

Front teeth (incisors) of gnawing animals are large and set deeply into the bone. Incisors of the beaver have a hard enamel covering on the front but are of softer dentine in back. The softer dentine wears away faster than the hard forward portion, leaving the incisors chisel-shaped.

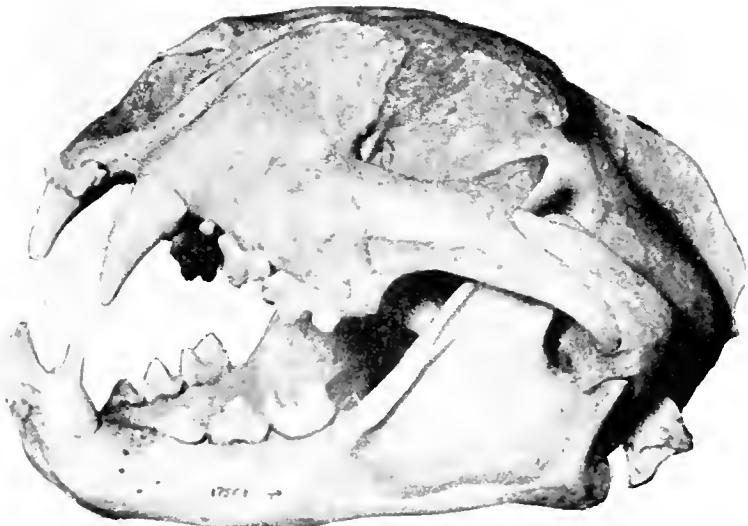
The large gnawing teeth are separated from the other teeth by a wide space. The lips often pinch into this space and prevent chips from getting into the mouth cavity.

Continual growth of the beaver's incisors provides a solution to wearing away of teeth; however, if a tooth becomes broken, the opposing tooth continues to grow and in rare cases may finally get so long that the back grinding teeth can not come together.



MOUNTAIN LION

The mountain lion has large, sharp canine teeth typical of flesh eaters (carnivores) for piercing and tearing flesh. Certain teeth of most carnivores have sharp edges and fit past each other like scissors. These are the "carnassial" teeth which have been specialized for cutting flesh.



BEAR

Canine teeth of the black and grizzly bear are well developed, but the back teeth are low and rounded, providing a surface fitted to crushing fruits, berries, seeds, succulent vegetation and for eating flesh too. The black and grizzly bear are thus fitted with teeth appropriate for his omnivorous diets.





Helicopter with biologists and a cargo of paint bombs lifts into the early morning air for a moose-marking flight.

Censusing Moose by Helicopter

Anyone who buys Christmas ornaments in June can expect to be the object of some raised eyebrows. This was the experience of biologists LeRoy Ellig and Jim Mitchell. Actually, the ornaments served a very legitimate purpose. They were used in Montana's first moose census by helicopter.

The first census was conducted during June in the Upper Ruby River area where a shortage of twin calves and deterioration of primary moose food plants indicated too many animals for the available forage. In fact, the rate of twinning there was poorer than recorded by biologists for any moose herd of North America or Europe. Moose have a reproductive potential similar to that of mule deer, and twin calves are common where conditions are favorable.

Two additional areas were censused during September when moose were going through the annual fall rutting period and making use of heavy timber areas. Data from the censusing showed that areas in southwestern Montana have an abundance of moose. Better harvest of this animal would reduce numbers so important food plants would have a chance to get back into a more healthy condition.

With forage in good condition, we could expect to see more twin calves. With a higher rate of reproduction, as many or more moose could be produced on the area than presently, while providing some excellent hunting on a sustained basis.

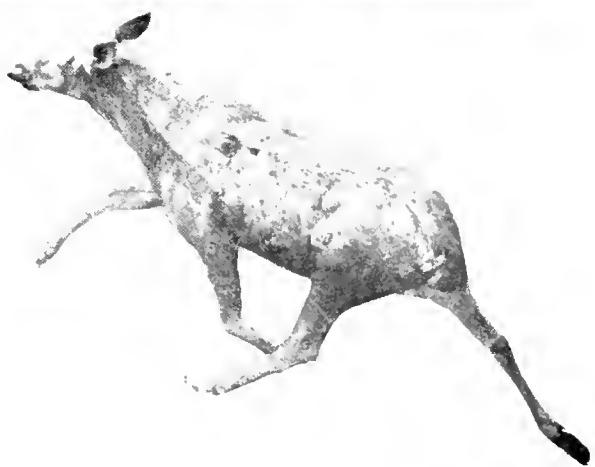


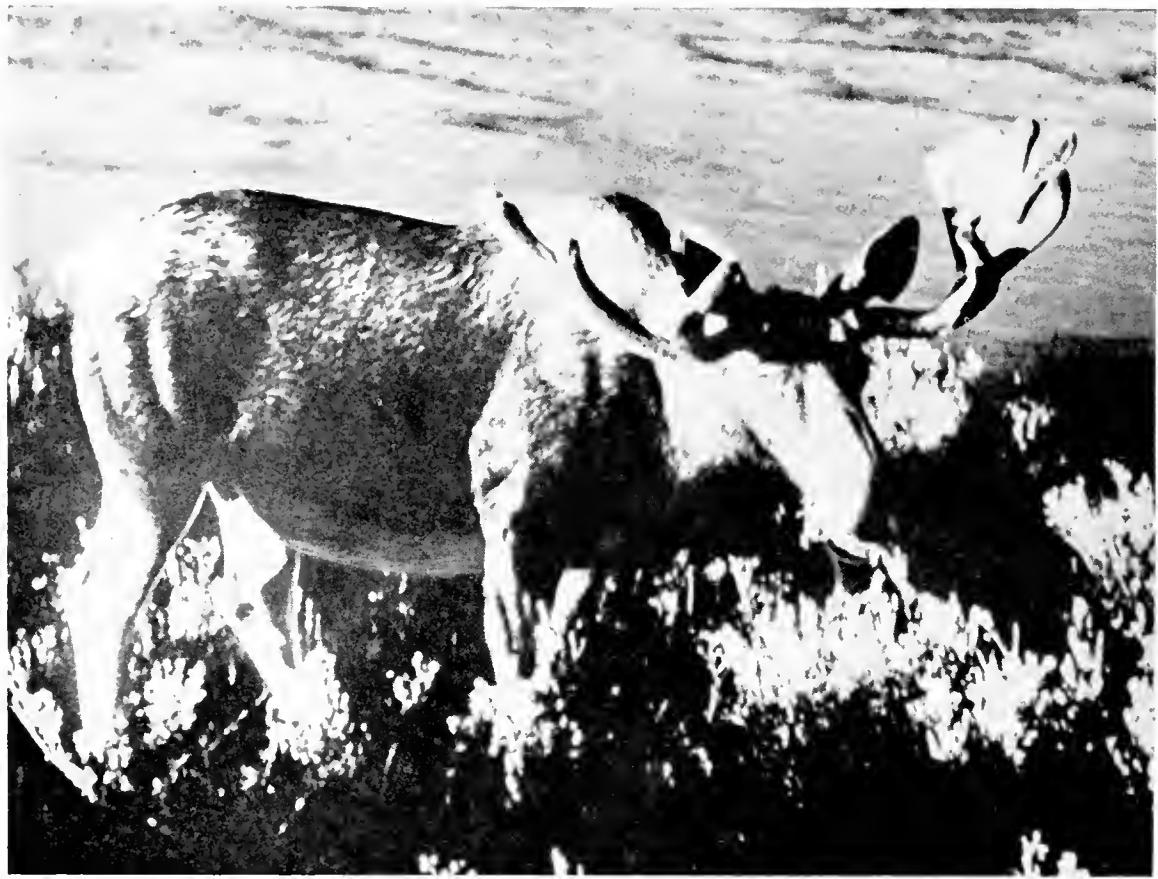
Paint bombs are manufactured by filling Christmas tree ornaments with paint. Bombs are then corked tightly. When an animal is struck, the ornament shatters and Mr. Moose sports a new coat of paint.



Bombs Away! Ralph Rouse fires at a moose below. About 75% of moose seen were successfully marked during paint runs.

After marking flights, additional flights are made to spot and record as many moose as possible. The ratio between marked and unmarked moose provides a reliable basis for estimating numbers over large areas.





"Moose! Largest of Montana's Big Game"

By JIM PEEK, Management Biologist

"No, I didn't see anything but four does . . . oh yes, and another blasted moose!" Have you heard hunters make a statement like that, or made one yourself?

Moose are exasperating to many a hunter after other game, a nuisance to more than a few ranchers, and a management problem for the Fish and Game Department. What about our oldest, largest, and most widely distributed member of the deer family? Is it a "vanishing species", or like deer, antelope, and elk, will it lend itself to annual hunting? Where do Shiras moose fit into Montana's game picture?

Moose, unlike deer and elk, are a solitary sort. Seldom does one see groups of over three animals during the summer. The moose are also quite sedentary, and

may remain in a small locality such as an aspen grove of a few acres for a week or more before moving on. In the Ruby River of Madison and Beaverhead counties, the total range covered in summer may vary from as little as a square mile during wet years to as much as five square miles or more during dry years. Favored foods in this area during the summer are sticky geranium, cinquefoils, cow parsnip, aspen, willow and bog birch. In other areas like the Yellowstone, aquatic plants such as pondweed are favored during the summer.

With September the rutting period approaches and Ruby River moose bulls congregate in groups of up to five or more on willow bottoms. Here preliminary rutting activity such as antler polishing and jousting takes place. When the rut is in full swing during late September

and early October, the cow allows the bull near the calf for the first time. This group, or just a cow and bull, becomes a mating group. The group may be quite mobile, moving distances of three miles or more in some cases. During the rut the bull drives the cow about and displays his prowess by rubbing his antlers on a willow bush before the unimpressed cow. The bull paws out a rut pit in the earth, urinates in it, then perfumes himself by rolling in the mess.

A bull may stay with a cow for as little as three or as long as twelve days, the longer time being the rule. The main breeding period is short, lasting only ten days or so. Some animals, particularly younger ones, extend the breeding season through October. In keeping with their solitary behavior, moose tend toward limited polygamy in the Ruby. More extensive polygamy is noted in other areas.

In late October and November, moose move to heavy timber cover at the heads of drainages. Currant, willow, aspen, and subalpine fir are important food items at this time. Moose withstand more snow than elk or deer, and may remain at these higher elevations for long periods. Some animals even remain at high elevations all winter long. In the Ruby, the majority will eventually come down to an area along a stream bottom where willow, silverberry, western birch, dogwood and maple are preferred foods. Here larger moose groups of mixed ages and sexes will gather.

The calving period, in late May and early June, finds moose in scattered aspen and conifer patches at low elevations. In the Ruby River area, it is not uncommon to find a moose cow with a young calf in sagebrush a mile or more from taller cover. In other areas, cows may prefer damp isolated willow and alder patches for calving areas. This demonstrates the adaptability of moose to local conditions. A cow may give birth to a single calf, twins, or rarely triplets.

What does a moose weigh? Authentic records show that a Montana moose bull

may weigh up to 1200 pounds live weight, Canadian individuals to 1400 and the Alaska moose to 1800. One may expect to hear of larger animals as more are weighed, but average weights will run 200 to 400 pounds lower than these.

How does the game manager consider this life story in his moose management program? Moose, like deer and elk, have the ability to eat themselves out of house and home. The amount of food on the winter range limits the size of the moose herd. Decline of moose numbers in Canada, Alaska, and Michigan have been attributed to too many moose for the available range. Reports show a similar situation in the Absaroka Primitive Area of Montana.

Favored moose wintering areas over much of the western moose range are in stands of willow, birch, aspen and alder. These stands are often found in areas that have been burned or logged. If left alone, these trees and shrubs will eventually be replaced by trees such as Engelmann spruce or other poor moose food. Moose numbers vary with these natural changes in vegetation. In turn, these natural changes are hastened by heavy use of favored species by moose. The reduction in moose numbers from highs of the 20's over the western moose ranges is attributed to natural vegetation changes hastened by heavy use of favored species by moose.

In the Ruby, wintering areas along streams are a key to moose management. Present efforts consist of measuring use of moose food species like willow and silverberry on these areas and adjusting moose numbers to the amount of winter food available.

Many studies demonstrate the tie-up of reproduction, or how many calves are born and survive, to range condition. Let's compare moose reproduction and hunter harvest in Canada and Scandinavia with ours in Montana. An intensive management system of harvesting moose on the basis of range conditions, trends in population numbers, and moose damage to forest and crops is practiced in Sweden

and Newfoundland. Annual kills in these areas have been between 20 and 30 percent of the total moose herd! Is Newfoundland worried about killing off the moose? Hardly . . . in fact, an advertising program designed to bring in more hunters is currently in effect to put more areas under this system of management.

Twin births are common under this system. In Sweden, each 100 cows average 179 calves a year during their prime. This average would be excellent for our own mule and white-tailed deer!

Alaska moose studies also demonstrate the relationship of reproduction to range condition. Highest pregnancy and twinning rates were found in areas where range conditions were good. Closer to home, British Columbia reports also show this relationship.

Well, we know that moose are not a "vanishing species". They can be managed under a sustained annual harvest system. In fact, reproduction-wise, we can compare the moose to the mule deer. Twinning is not uncommon on favorable range, and yearlings may breed. We know that range condition, particularly that of winter concentration areas is a key to moose management.

Can we apply European and Canadian research towards a moose management program in Montana? Specifically no, but in principle, definitely yes. Research in other areas may be used to guide specific management in local areas. Like the doctor who uses information gained by others, the game manager also uses research from other areas. As the doctor considers the individual under treatment, the game manager must tailor his program to local situations. Land use practice and accessibility of the area to hunters are prime factors influencing local management.

What work has been done on Shiras moose in Montana? Reports from the Absaroka area show a buildup of moose numbers to a high in the 1920's and 1930's. By the 1940's no twins were observed and heavy use of willows by moose

was noted. Current work in this area shows extreme deterioration of willow bottoms and fewer moose.

Recent work in the Ruby River area also shows an overused winter range and a correspondingly low twinning rate. Summer ranges were even overused. Too much use of willows was noted in this area as early as 1952.

The conclusion is obvious—we haven't been harvesting enough moose to prevent range deterioration in this area.

In another area, the lower Madison River, where forage supplies for moose are adequate, much higher twinning rates



Calving areas in the Upper Ruby River are dry sage benches.

were noted. This shows that Montana moose, with adequate forage, can be as productive as Swedish, British Columbia or Newfoundland moose.

What about Montana moose harvests? Senate Bill 41, 1945, authorized legal moose hunting by special permit in Montana. The first permits were for 20 bulls in Beaverhead, 40 in Park, and 30 in Gallatin counties. Since then most of western Montana has been opened to special, either sex moose seasons. Since 1957, approximately 500 moose permits for the whole state, have resulted in slightly over



A reduced moose population results from prolonged over-utilization of willows such as these.

400 moose harvested annually. This is about an 85% hunter success.

In the Ruby area, where about 100 permits have been issued annually during recent years, success is closer to 75%. Why should this be? Less moose? Not at all! A glance at the location of hunter kills gives us the answer. One can determine where roads run through the area by pinpointing moose kills on a map. Most are within one-half mile from a road. Who is going to shoot a big bull moose four miles from the road anyway, if he can get one closer?

In late October and November the majority of moose are located in dense cover at higher elevations in drainage heads, not in easily accessible road side areas where most hunting is done. The hunter should expect to hunt for his moose as the ani-

mals are brought under more intensive management. Easy roadside moose can not be provided without having the majority of the population not being subjected to hunting.

The future of moose in Montana is excellent if we base management on a firm foundation of factual information. Healthy moose herds on good range is the management objective. This objective can only be met by gathering information on range conditions, reproductive success and special local conditions in each management area. We must keep abreast of research in other areas, as well as digging out local information. This information will ensure an up-to-date management program and Montanans will have moose to see and hunt for generations to come.

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